METHOD FOR SETTING IMAGE INTENT

FIELD OF THE INVENTION

5   The present invention relates to the field of digital image acquisition, and more

particularly, to the field of sharing digital images among users.

BACKGROUND OF THE INVENTION

Users of digital cameras often have no problems taking photos, but encounter

10   difficulties in sharing these photos with other people. Often, the photos must be

downloaded to a computer, viewed and selected for sharing, and sent as an email

attachment to a relative or friend, uploading to their personal web page, or an online

photo processing service for the purchase of prints from the image. All of this manual

work often stands in the way of a user desiring to share their images, but lacking the

15   computer knowledge necessary to do so. There is a need in the art for an apparatus or

method that enables users of digital image capture devices to easily select destinations for

their images.

After capturing a number of images, on a camera or other image capture device, a

user may edit the set of images, deleting any unwanted images while retaining the rest.

20   After editing, the user may wish to have one (or more) copies made of each image.

Currently many image capture devices require the user must manually transfer all of the

images to a computer and select the destination printer or internet print service. There is

a need in the art for an apparatus or method that enables users of digital image capture

devices to easily select a printer or print service, the number and size of copies desired.

25   Then, after selecting the users intent for the images, automatically send the images to the

printer or print service with all instructions necessary to obtain the number and size of copies desired by the user.

SUMMARY OF THE INVENTION

An image intent file is created by a user or a trusted friend containing information about one or more of the common image destinations of the user. These destinations may include email addresses, web sites, local or networked printers, internet printing services, and I-frames (picture-like electronic displays with download capability). The possible image destinations included in the intent file are displayed graphically or textually on the display of the image capture device. For each image, the user is able to select one or more image destinations from the display of the image capture device. When a share function on the image capture device is activated, all images associated with each destination that are contained within the image capture device are sent to the destination with sufficient configuration data such that the destination correctly receives and processes the image or images.

Other aspects and advantages of the present invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawings, illustrating by way of example the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows the display of an image capture device incorporating the present invention.

Figure 2 is an embodiment of an intent file according to the present invention.

Figure 3 is a flowchart of a method for the sharing of digital images according to the present invention.

Figure 4 is a block diagram of part of an image capture device incorporating the present invention.

DETAILED DESCRIPTION

5   Figure 1 shows the display of an image capture device incorporating the present invention. A display **100** incorporated into an image capture device may include a variety of icons or other representations of files and actions. In the example embodiment shown in Figure 1 a number of icons representing files and actions are shown, but these files and actions may be represented textually within the scope of the present invention. In this

10   example embodiment, photo 117 **102** is represented by an icon. Likewise, photo 119 **104**, photo 120 **106**, photos 123 through 133 **110**, and photos 117 and 119 **112** are all represented by icons. Also, all photos **108** in memory are represented by an additional single icon. A recycle icon **114** is available for deleting any photo or group of photos from the memory of the image capture device. An information icon **116** is available for

15   displaying information such as size, date taken, and other data about any photo or group of photos. Additionally, a number of icons are present representing possible photo destinations as defined in an intent file. An example intent file corresponding to this example display is shown in Figure 2. The icons in this example embodiment include a modem icon **118** so that a photo or group of photos may be transferred through a modem.

20   Also present are icons to send an image to Uncle John **120**, and one to send an image to Aunt Judy **122**. (All the names contained in this document are fictional.) A computer icon **124** allows the user to download a photo or group of photos to a computer. The computer may be electrically coupled with the image capture device, or wireless communication techniques may be used to transfer the images. A printer icon **126** allows

25   the user to send the photo or group of photos directly to a printer. A target icon **128** may

allow the user to select a target device not shown on the display. A storage icon **130** may

allow the user to save the photo or group of photos to an external storage device. An

email icon **132** may allow the user to email the photo or group of photos to a person, a

mailing list, or other email destination, such as an online photo processor. An I-frame

5   icon **134** would allow a user to send an image or group of images to a picture-like

electronic display with download capability (I-frame). Finally, a web page icon **140**

would allow a user to automatically upload an image or group of images to a web page.

All the destination icons shown (and others not shown) in the example embodiment of the

present invention in Figure 1 have corresponding entries in an intent file that is shown in

10   Figure 2.

Figure 2 is an embodiment of an intent file according to the present invention.

This example intent file contains example data such as might be used with the example

icons present in Figure 1. The syntax shown in Figure 2 is one possible syntax, out of an

immense variety that may be created for use with the present invention. The actual

15   syntax and file format used by the intent file are not relevant to the functionality of the

present invention. The first line of the example intent file of Figure 2 is a comment line

200. The comment line **200** contains the text, "Intent file for Jane Doe" used in this

example to identify the user of the intent file. A modem object **218** is shown in the

example intent file with a name of "modem1" as shown in the first line of the modem

20   object **218**. This modem object **218** has a .port property of "COM1", and a .speed

property of 2800. A first person object **220** with a name of "Uncle John" is also shown in

the example intent file. The first person object **220** has a .email property of

unclejohn@invalid.com, representing the email address of Uncle John, and a .format

property of jpeg, representing the format the photos will be sent in. A second person

25   object **222** with a name of "Aunt Judy" is also shown in the example intent file. The

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second person object **222** has a .email property of auntjudy@invalid.com, representing the email address of Aunt Judy, and a .format property of tiff, representing the format the photos will be sent in. A computer object **224** with a name of "PC" is also shown in the example intent file. The computer object **224** has a .directory property of "c:\My Photos", representing the directory photos will be stored in, and a .format property of tiff, representing the format that the photos will be stored in. A printer object **226** with a name of "DeskJet" is also shown in the example intent file. The printer object **226** has a .quality property of "high", representing the printing quality desired, and a .format property of "pcl", representing the data format to be sent to the printer. The printer object **226** may further contain properties similar to, but not limited to, those present in the Digital Print Order Format (DPOF) released by Canon, Inc., Eastman Kodak Company, Fuji Photo Film Co., Ltd., and Matsushita Electric Industrial Co., Ltd. on July 17, 2000. A target object **228** without a name is also shown in the example intent file. This target object **228** includes a .list property of "other friends", representing the first list object **236** in the example intent file and a .type property of ":person", representing the data type of the first list object **236**. This target object **228** is one possible example of the use of hierarchy within an intent file. By the use of a single target icon **128**, the user is able to have many more intents specified than may be displayed in one screen of the display **100**. When the target icon **128** is selected, another screen is displayed containing the intents specified in the first list object **236** that the target object **228** references. In this case two more person icons would appear with the names of "John Doe" and "Mungo Parkinson." A storage object **230** with the name of "CDRW" is also shown in the example intent file. The storage object **230** has a .type property of "CD-R", representing the type of CDROM to be written, and a .speed property of "12x", representing the maximum speed of the CDROM drive. An email object **232** without a name is also shown in the example intent

file. The email object **232** has a .list property of "email friends", representing the second list object **238** in the example intent file, and a .type property of ":person", representing the data type of the second list object **238**. This email object **232** is another example of the use of hierarchy within an intent file. By the use of a single email icon **132**, the user

5 is able to have many more intents specified than may be displayed in one screen of the display **100**. When the email icon **132** is selected, another screen is displayed containing the intents specified in the second list object **238** that the email object **232** references. In this case two more person icons would appear with the names of "Cletus Purcell" and "Lincoln Rhyme." An I-frame object **234** with the name "living room" is also shown in

10 the example intent file. The I-frame object **234** is used when the I-frame icon **134** is selected. This I-frame object **234** has a .format property of jpeg, representing the data format of the images to be sent to the I-frame. A web page object **240** with the name "my web site" is also shown in the example intent file. The web page object **240** is used when the web page icon **140** is selected. This web page object **240** has a .url property of

15 "http://www.invalid.com/~jane/photopage.html," representing the uniform resource locator (URL) of the web page that the image or images are to be uploaded to.

Figure 3 is a flowchart of a method for the sharing of digital images according to the present invention. In a step **300** a user or their trusted friend creates an image intent file containing intent objects specifying the sharing parameters for the user. In a step **302**

20 the image intent file is transferred to an image capture device. This transfer may take place through a cable, through infrared transmitter/receiver devices, through the manual transfer of removable memory cards, or any other method of transferring data from the device where the image intent file is created to the image capture device. The transfer step may be initiated in a wide variety of ways. The pushing of a share button by a user

25 may initiate the transfer, or the simple connection of a cable between the image capture

device and an external electronic device may initiate the transfer. Further, if transmitters and receivers are used for the transfer, the transfer may be initiated by bringing the transmitter and receiver within range. In other words, the transfer may be initiated when the proximity of the transmitter to the receiver crosses a proximity threshold, where the

5   proximity threshold is set to a distance at which communication between the transmitter and receiver may occur. In a step **304** at least one digital image is captured by the image capture device. Note that this image capture step **304** may occur at any point in the process prior to the sharing step **306**. In a step **306** when one or more intent objects are selected by the user, the image or images as specified in the image intent objects selected

10   by the user are shared.

Figure 4 is a block diagram of part of an image capture device incorporating the present invention. An intent file **400**, such as that shown in Figure 2 is received by the image capture device in a receiver block **402**. The receiver block **402** then stores the intent file **400** in a memory **404**. The memory block **404** is connected to a display **408**

15   similar to that shown in Figure 1 where icons representing intent objects are displayed. A control block **406** is used to control the receiver **402**, memory **404**, and display **408** blocks. The control block **406** also controls when the memory **404** transmits image and intent data **412** to a transmitter block **410** for transfer to a computer, printer, or other device. Note that the control block **406** may include buttons on the image capture device

20   that allow the user to select between the several intent icons shown on the display **408**. The transmitter **410** may send the data to an electronic device such as a computer, printer, or other device using a cable, or wireless technology. Likewise the receiver **402** may receive intent files from an electronic device through a cable, or with wireless technology. In some implementations, the receiver **402** and transmitter **410** may be combined in an

25   input/output (I/O) block. Further, the receiver **402** and transmitter **410** may be activated

by a wide variety of techniques, not limited to the control block **406**. For example, in an

example embodiment of the present invention, the receiver **402** or transmitter **410** may be

configured to automatically begin data transfer when the image capture device comes

within a specified distance of the electronic device they will communicate with. This

5   distance need not be specified as a discrete distance, but in some embodiments may be set

to a distance where the receiver **402** or transmitter **410** may reliable transfer data with the

electronic device. In wireless technologies, this distance may be the point at which signal

strength is sufficient to allow efficient data transfer between the devices. In some

embodiments of the present invention, a removable memory card **414** may be used to

10   transfer image and intent information from the image capture device to an electronic

device such as a computer or printer.

        An intent file, such as that shown in Figure 2, may be created by a user of an

image capture device, or a trusted friend with more computer skills. Once the intent file

is created and downloaded to the image capture device, relatively unskilled users may

15   select photos and share them with other people, send them to printers and other

destinations without the knowledge of all the details that are needed to correctly specify

these destinations. These intent files may be created on a computer, personal digital

assistant (PDA), or other device capable of creating or editing intent, and downloaded to

the image capture device through a cable or with the use of wireless technology (such as

20   infrared transmitters and detectors). Some web sites may contain intent file objects

allowing people browsing the web site to download the intent file objects and thus

enabling the users to easily transmit images to the web site (or other location) without

having to bother with the details of the configuration. Families may wish to create a web

page containing intent file objects for each of the family members wanting to receive

images. Further they may create intent file objects that enable the sharing of images with different groups of family members each via a single intent file object.

Businesses may also take advantage of portability of these intent file objects and provide intent file objects for transmitting images to be printed directly to the business. Further, printer manufacturers may wish to make available intent file objects optimized for best results in printing to their different models of printers. Computer storage device manufacturers may likewise make optimized intent file objects publicly available for their different models.

The foregoing description of the present invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed, and other modifications and variations may be possible in light of the above teachings. The embodiment was chosen and described in order to best explain the principles of the invention and its practical application to thereby enable others skilled in the art to best utilize the invention in various embodiments and various modifications as are suited to the particular use contemplated. It is intended that the appended claims be construed to include other alternative embodiments of the invention except insofar as limited by the prior art.